



# Complex Learning Process

Use the Complex Learning Process to identify where your students are in their learning, and use the associated tips to ensure you are supporting your students in their learning and skill development..

## EXPLANATION

A wise woman once sang "let's start at the very beginning..." Always think about what stage your learners are in, make sure you orient them to the structure/language/setup/context of your content first! It is also crucial for students to learn the content in the context in which they will use it. An effective first step is to explain the "why" or purpose of the session. Learning objectives are key to help frame what will be covered.

This is where students start to engage with the content more deeply through prework, videos, lectures, application exercises, etc. Emphasis should be placed on critical and difficult concepts. Learning objectives help to identify where to focus in the more detailed explanation of content.

This step occurs multiple times throughout the Complex Learning process. As students learn content they should continuously circle back to reinforce and practice what they have learned. Throughout the learning process, insert reinforcement, formative questions and practice that enable students to apply the content to problem sets or clinical cases. Students should be given the tools to interact with the content in a variety of engaging ways.

Guide students in drawing connections between different content areas. Cognitive integration of content is important in ALL sessions. What has been taught already about the subject? What does this content lead to? How is it different? Students will be integrating and applying content within sessions, across courses and across phases.

Once students have learned a lot, connected that with other knowledge and skills, they are now ready to APPLY what they have learned. This can be in a case, a simulation, or the clinical setting. It is always good to start in a familiar setting before moving on to more varied and challenging applications. Students will continue to build on the content and skills with new applications. Reinforcement with questions about how and where previous content is used in clinical practice is very important at this stage.

Apply content in new contexts - Application of learning extends into the latter courses, settings, and patient types. Students, continue to work with patients, and apply their knowledge, skills and behaviors in new contexts.

**Framing/  
Orientation Content**

**Content 1  
Deep Dive**

**Content 2  
Deep Dive**

**Reinforce,  
questions, & practice**

**Connect Content 1 & 2  
Cognitive Integration**

**Reinforce,  
questions, & practice**

**Apply content in familiar  
& new contexts**

**Reinforce,  
questions, & practice**

**Apply content in  
new contexts**

## ACTIVITIES

- Learning Objectives
- Session agenda with purpose & activities
- Diagram/flow chart
- Outline of activities
- Overview or introduction chapter, video, or article
- Previously taught content; refer back to specific sessions

- First objective - difficult concept deeper dive
- Second objective - critical concept deeper dive
- Content should include pathophysiology, anatomy, and biochemistry to help students with storage and recall
- Clinical content, treatment, pharmacology

- In-class problem-sets, slido, or others
- Think, pair, share
- Clinical case
- End-of-week formative

## COURSES

- Cases, PBL, & TBL
- Clinical Skills
- Community Projects
- Preceptorships

- OSCEs
- Clerkships
- Community
- Preceptorships

- Clerkships
- Sub-Is
- Electives
- Community Work

## ACTIVITIES

- Integrated Case Questions
- Students create questions for each other on Twitter or Instagram
- Discussions integrating community work & content

- Assess students on application of knowledge and skills from previous courses
- Students create growth goals in gap areas

# Complex Learning Faculty Tip Sheet



Hackensack Meridian  
School of Medicine

## What is Complex Learning?

Medical Students need to achieve Complex Learning to practice medicine successfully in the uber-information age. Complex Learning is therefore a learning strategy used at the SOM. This guides both faculty and learners in the development, teaching, and learning of the complex and dynamic content and cognitive skills needed to be a successful physician, including critical lifelong learning skills.

For faculty, this includes selecting learning techniques and resources based on what they are teaching and where they are in the curriculum.

Faculty should use Complex Learning to guide WHAT they are teaching, HOW they are teaching, and WHAT cognitive skills you are enabling your students to achieve.

Below are the 4 components of Complex Learning with guidance for how faculty can teach in a way that supports student development of Complex Learning Skills.



## Key Components

- 1** Integration of knowledge, skills, and attitudes
- 2** Coordinating qualitatively different (constituent) parts
- 3** Transferring what is learned to new problems
- 4** Transferring what is learned in the classroom to the clinical/real world setting

## What Faculty Can Do

- ✓ Integrate content, skills, and behaviors within and across courses, building from simple to complex. Continue to emphasize biochemistry, pathophysiology, and anatomy in discussing management and treatment of diseases.
- ✓ Provide some context about a session or topic and how it relates to content from other teaching sessions.
- ✓ Provide engaging, active learning that helps apply the concepts. Develop sessions that create a dynamic learning environment to help students learn to think critically. Application activities should focus on clinical problems.
- ✓ Teaching sessions should use real-world, clinical examples and activities. In clinical settings, when working with patient cases, use questions to prompt students to recall related basic content.

### Resources

*Ten Steps to Complex Learning: A Systematic Approach to 4 Step Instructional Design*, van Merriënboer, et. al, 2007  
*The Master Adaptive Learner*, Cutrer, et. al., 2020  
Desy, J., et. al., *How teachers can help learners build storage and retrieval strength*, Medical Teacher, Vol 40, 2018